To: Adam Loney, CRA

From: Leslie Patterson, EPA

Subject: Comments on four workplans entitled "Explosive Gas Mitigation Work Plan", dated May 18, 2012

Date: August 24, 2012

1. Workplan Title

Change the title to "Vapor Intrusion Mitigation Work Plan…" instead of "Explosive Gas Mitigation Work Plan…"

2. Cumulative Risk Calculations

Calculate and include the cumulative cancer and non-cancer risks in subslab soil gas and indoor air samples in accordance with Section 8.1.1 of the *U.S. EPA Region 5 VI Guidebook* (EPA, 2010; *Guidebook*) and Sections 5.3 and 5.4 of the *VI Investigation Work Plan* (EPA, 2011). Although it is not specified in either document, measured indoor air concentrations of VOCs that are not attributable to the VI pathway (that is, determined to be likely resulting from indoor VOC sources and/or outdoor air based on a multiple lines of evidence evaluation) should not be included in the cumulative risk calculations.

The following review comments were prepared assuming that the completed cumulative risk calculations will not change the categorization of the buildings as described in Section 8 of the *Guidebook*. It is also possible that additional buildings requiring mitigation may be identified from the cumulative risk evaluation.

3. Section 3.3, Building Controls/Interim Mitigation Measures

Building controls should be implemented as interim measures that will be performed without a detailed workplan to reduce concentrations of VOCs in indoor air while workplans for more permanent, long-term mitigation measures are developed. Interim VI measures such as HVAC modifications and sealing cracks and other entry points in the slab or floor should be performed the three Category 3 buildings (2031 Dryden Rd., 1951 Dryden Rd. and 2015/2019 Dryden Rd.). EPA and other stakeholders should be informed of the onset and progress of these activities via e-mail, but the activities should not be delayed until the VI mitigation workplan is approved.

Information to be provided to property owners prior to implementing interim measures includes but is not limited to:

a) It is still the Respondent's responsibility to document the specific modifications that were made, ongoing monitoring, and demonstrating effectiveness.

b) HVAC modifications generally result in increased utility costs.

c) Specific details on the specialists and procedures that will be employed to complete the HVAC adjustments.

d) Timeframe for proper curing of sealants, during which buildings may not be re-occupied.

The following comments are provided for CRA's consideration during planning and implementation of HVAC modifications as an interim measure:

a) HVAC systems should be evaluated by experienced HVAC personnel to determine if the equipment is serviceable and can be modified to function as a VI mitigation measure.

b) Repairs or upgrades to an HVAC system may be required before the equipment can be used to mitigate VI.

c) Impacts to utility costs should be evaluated because HVAC modifications typically result in the use of increased makeup air that must be heated in winter and cooled in summer.

Each of the three Category 3 buildings has an on-grade concrete slab in fairly good condition with some significant cracks. Therefore, sealing approaches should be implemented at each building. The following recommendations are provided for CRA's consideration during planning and implementation of sealing as an interim measure:

a) Consider surface preparation requirements (crack grinding, surface cleaning [sand blasting/pressure washing], and need for backer rod for crack depth control).

b) Concrete floor surface repair may be necessary before sealing the floor.

c) Gaining access to cracks may require moving building contents, which may significantly affect building operations.

d) Floor sealing typically results in poor indoor air quality for several days while the sealants cure. Therefore, the building cannot be re-occupied until the sealants have properly cured.

e) Crack sealant is described as hydraulic cement or VOC-free sealant, but additional specific details should be provided on the brand and type of sealant proposed for crack sealing activities. Please reference the email discussion with EPA on use of the Quikrete Hydraulic Water-Stop cement.

4. <u>Section 3.3.1, Communication Testing</u>

a) Specify the following:

- Extracted soil gas will be vented to the outdoors and not discharged inside the structure.

- During the dynamic testing process, exhaust soil gas samples will be collected for laboratory analyses to evaluate potential air emission permitting and off-gas treatment requirements.

b) The "floor drain" in the B&G Trucking Building warrants further discussion and investigation; it is a subslab pit that houses a 55-gallon drum. It is unknown if the pit is sealed with concrete, but if not, this may be a significant VI pathway. Also, the location of this "floor drain" does not appear to be accurate on the workplan figure; it is located closer to the north side of the building.

5. <u>Section 3.3.2, Design</u>

a) Provide additional detail on the data to be evaluated for system design, including the following elements:

- Review of the pressure and flow measurements.
- Identification of the radius of influence that can be achieved at a given location at a given negative pressure and flow rate.
- Identification of barriers to subsurface flow so that the number and location of SSDS nodes can be determined.
- Evaluation of the subslab soil gas data against air permitting requirements and the determination of whether off-gas treatment may be required.

b) Include the required vacuum and flow rates of mitigation fans in the "identification of materials and equipment".

c) When selecting the type and locations of pressure and flow monitoring equipment, state that each SSDS fan shall be fitted with a U-tube manometer to monitor pressure and port with valve for collecting flow measurements. These monitoring locations should be accessible from the exterior of the structure to minimize the intrusion on building occupants.

d) Identify locations that require sealing so that lower operational costs can be achieved and specify appropriate sealing materials.

e) The *Vapor Intrusion Mitigation System Design Report* should include:

- pressure field extension test results (tables and figures)
- soil resistance vs. fan curve graphs
- justification of mitigation fan(s) or blower(s) chosen for installation
- system layouts
- cost estimates

- A Contingency Plan to address situations in which a sufficient negative pressure drop is not achieved, or, in the case of SimTrainer Building, where indoor air or subslab explosive gas concentrations increase.

6. Section 3.3.3, Construction

a) Specify whether the individual who performs the diagnostic testing also install the SSDS.

b) Specify that the baseline pressure, flow, and extraction flow concentrations shall be measured.

c) Specify that a report documenting SSDS installation and system-start up monitoring will be prepared and submitted to EPA.

7. Task 3.3.4.1, Maintenance

a) Provide more details about the O&M activities that shall be performed each time monitoring is performed. O&M shall include an evaluation of all of the visible system components for damage or other upset conditions; proper operation of the fans, manometers, and sampling ports; and a comparison of the current measurements of flow and pressure against prior measurements to look for changes that could indicate upset conditions (such as fan wear, pipe restrictions, or water in pipes; see Section 10.3 of the *Guidebook*).

b) Collect vacuum and flow measurements from the exterior of the structure to reduce impacts to the building occupants (*Guidebook*).

8. Task 3.3.4.2, Monitoring

a) The section references Section 3.3.1 as detailing the system start-up monitoring program, but the description appears to be in Section 3.3.3 (Paragraphs 7 and 8). Please correct or clarify the reference and the activities comprising system-startup monitoring.

b) Perform the second IA sampling 180 days after system installation, and perform a third IA sampling one year after system installation (*Guidebook* Section 10.1.1). After the first year, indoor air sampling could be conducted on an annual basis, with sampling performed during warm weather.

c) Concurrent outdoor air sampling with indoor air to provide information on whether outdoor air concentrations are influencing the indoor air concentrations is recommended.

d) Measurements of pressure and flow from the SSDS mitigation fan inlet piping should be collected quarterly or semiannually for the first year and then annually thereafter. Pressure measurements shall be collected quarterly for the first year and then semiannually thereafter from the subslab monitoring points to evaluate the negative pressure field extension beneath the structure.

e) EPA recommends the collection of exhaust samples from the exhaust vents of the SSDS blowers/fans to ensure exhaust concentrations meet Title V emissions standards, estimate steady-state discharge concentrations and mass discharge rates for the SSDS, and assess how the operation and discharge of untreated exhaust vapors to the atmosphere may influence outdoor air.

9. <u>Explosive Gas Monitoring Systems (SimTrainer Building Only)</u>

a) The locations of the sensors for the explosive gas monitoring system should be indicated on a figure and described specifically in the text.

b) An instructional technical memo should be provided for the tenants/owners in the event that the explosive gas monitoring system is triggered, and include:

- Procedures for operation and maintenance of the system.

- Procedures for responding to the alarm, notification of emergency agencies (police, fire department, etc.).